

### **REMARKS**

Claims 1 through 18 are pending in the subject application. Claims 1-12 stand finally rejected under 35 U.S.C. 103(a). Claims 1-7 and claim 12 have been amended. Claims 13-18 have been newly added.

The Applicants appreciate the Examiner's thorough examination of the subject application. Moreover, the Applicants appreciate the Examiner's granting an office interview on April 7, 2004. The Applicants respectfully request reconsideration of the subject application based on the discussion in the office interview and following remarks.

### **35 U.S.C. § 103(a) REJECTIONS**

The Examiner rejected claims 1, 2, and 12 under 35 USC 103(a) as being unpatentable over admitted prior art in view of U.S. Patent Number 5,537,235 to Ishihara, et al. ("Ishihara" or the "Ishihara Reference") further in view of U.S. Patent Number 4,526,818 to Hoshikawa, et al. ("Hoshikawa" or the "Hoshikawa Reference"); claims 3-7 and 10-11 under 35 USC 103(a) as being unpatentable over admitted prior art in view of Ishihara and Hoshikawa further in view of U.S. Patent Number 6,104,467 to Nakahara, et al. ("Nakahara" or the "Nakahara Reference"); and claims 8-9 under 35 USC 103(a) as being unpatentable over admitted prior art in view of Ishihara, Hoshikawa, and Nakahara further in view of U.S. Patent Number 6,327,011 to Kim ("Kim" or the "Kim Reference"). The Applicants respectfully traverse these rejections in view of the above-amendments and for the reasons provided in greater detail below.

The invention as claimed provides a liquid crystal display device ("LCD") with a cell gap that is formed so that, at room temperature, the gap gradually and continuously increases from the center of the display area to the ends of the display area. See, e.g., Specification, page 6, lines 12-18. Furthermore, the LCD is formed to

provide a cell gap that, at higher temperatures, gradually decreases from the center to the ends of the display area. See, e.g., Id., page 25, lines 12-19. This arrangement makes it possible to smooth out thermal expansion differences and, at high temperatures, to prevent a cell gap from being too large at the center of the display area. See, e.g., Id., page 6, line 22 to page 7, line 2. The art cited by the Examiner addresses the thermal expansion difference problem; however, none of the cited references prevent a cell gap from being too large at the center of the display area at high temperatures.

The Examiner freely admits that, Ishihara does not disclose gradually increasing the cell gap from the center of the cell to the ends of the cell at room temperature. The Ishihara reference only makes the effects of temperature more uniform at the edge portions. Accordingly, Ishihara does not teach, mention or suggest a cell gap that gradually and continuously increases from the center of the display area to the ends of the display area.

To address this shortcoming in the Ishihara reference, the Examiner alleges that FIG. 8 of the Hoshikawa reference discloses a cell gap that increases from a center to the ends of the display area. As we discussed at length at our office interview, FIG. 8 of Hoshikawa merely shows manufacturing substrates 110 and 220 to provide an inward force during assembly. Id., col. 11, lines 59-60. FIG. 9 of Hoshikawa illustrates the finished cell (as well as FIGs. 1-6) in which the cell gap is uniform and there is no gradual increase. The arrangement disclosed by Hoshikawa is totally different from the present invention and certainly does not teach a cell gap that increases from the center to an end of the display area. Indeed, Hoshikawa teaches LCD panels arranged to provide a uniform cell thickness over the entire surface area of the cell. See, e.g., Id., col. 5, lines 14-21; col. 6, lines 64-68; col. 7, lines 42-47; and col. 7, line 67 to col. 8, line 2. Thus, Hoshikawa expressly teaches away from providing a cell gap that increases gradually and continuously from the center to the end of the display area and is, therefore, improperly relied on by the Examiner in rejecting claims 1, 2, and 12.

Accordingly, the Applicants respectfully assert that, claims 1, 2, and 12 are not made obvious by the admitted prior art in view of the Ishihara and Hoshikawa references.

Claims 3-7 and 10-11

The Examiner admits that Nakahara is a secondary reference and, impliedly, the Nakahara reference also cannot make up for the deficiencies of the Ishihara and Hoshikawa references. As provided in our earlier response, Nakahara neither teaches, mentions nor suggests resolving irregular display color of an LCD device resulting from a change in an atmospheric temperature by means of controlling the cell gap distance, and, more particularly, by forming a cell gap between a pair of insulating substrates so as to increase gradually and continuously from the center to the ends of the display area at room temperature.

Accordingly, the Applicants respectfully assert that, claims 3-7 and 10 are not made obvious by the combination of the three references.

Claims 8-9

The Examiner similarly admits that Kim is a secondary reference and, impliedly, the Kim reference cannot make up for the deficiencies of the Ishihara, Hoshikawa, and Nakahara references. Indeed, the Kim reference neither teaches, mentions nor suggests resolving irregular display color of an LCD device resulting from a change in an atmospheric temperature by means of controlling the cell gap, and, more particularly, by forming a cell gap between the pair of insulating substrates so as to increase gradually and continuously from the center to the ends of the display area at room temperature.

Accordingly, the Applicants respectfully assert that, claims 8-9 are not made obvious by the combination of the four references.

Claims 13-18

Support for new claims 13-18 is found in the Specification beginning at line 19, on page 11 and in FIG. 1. A cone-shaped cell or a cell with concave substrate is not taught, mentioned or suggested by the prior art or by the references cited by the Examiner.

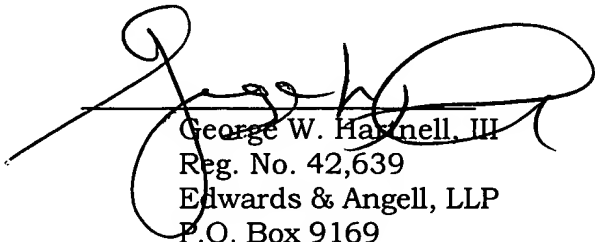
In short, it is respectfully submitted that, claims 1-18 are not made obvious by any of the cited references, and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claims 1-18 are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

The Applicants believe that no additional fee is required for consideration of the within Preliminary Amendment. However, if for any reason the fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge Deposit Account No. **04-1105**.

Respectfully submitted,

Date: June 2, 2004

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